

## INORGANIC HYDROGEN COMPOUNDS AND APPLICATIONS THEREOF

### ABSTRACT

Compounds are provided comprising at least one neutral, positive,  
5 or negative hydrogen species having a binding energy greater than its  
corresponding ordinary hydrogen species, or greater than any hydrogen  
species for which the corresponding ordinary hydrogen species is  
unstable or is not observed. Compounds comprise at least one increased  
binding energy hydrogen species and at least one other atom, molecule,  
10 or ion other than an increased binding energy hydrogen species. One  
group of such compounds contains one or more increased binding  
energy hydrogen species selected from the group consisting of  $H_n$ ,  $H_n^-$ ,  
and  $H_n^+$  where n is an integer from one to three. Applications of the  
compounds include use in batteries, fuel cells, cutting materials, light  
15 weight high strength structural materials and synthetic fibers, cathodes  
for thermionic generators, photoluminescent compounds, corrosion  
resistant coatings, heat resistant coatings, phosphors for lighting, optical  
coatings, optical filters, extreme ultraviolet laser media, fiber optic  
cables, magnets and magnetic computer storage media, and etching  
20 agents, masking agents, dopants in semiconductor fabrication, fuels,  
explosives, and propellants. Increased binding energy hydrogen  
compounds are useful in chemical synthetic processing methods and  
refining methods. The increased binding energy hydrogen ion has  
application as the negative ion of the electrolyte of a high voltage  
25 electrolytic cell. The selectivity of increased binding energy hydrogen  
species in forming bonds with specific isotopes provides a means to  
purify desired isotopes of elements.

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